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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/687,303

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Eko N. Onggosanusi

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TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

PUENTE, EVA YI

ART UNIT

PAPER NUMBER

2611

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/687,303	Applicant(s) ONGGOSANUSI ET AL.	
	Examiner EVA Y. PUENTE	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6,9-11,14,19-23,28,30,33,34,36-40,42 and 45-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3,6,9-11,14,19-23 and 45 is/are allowed.
- 6) ☒ Claim(s) 30,33,34,36-38,47,49-52 is/are rejected.
- 7) ☒ Claim(s) 28,39,40,42,46,48 and 53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Request for Continued Examination

1. The request filed on April 25, 2008, for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 10/687,303 is acceptable and a RCE has been established. An action on the RCE follows.

Claim Objections

2. Claim 28 is objected to because of the following informalities: claim 28 is dependent upon claim 24, which is a canceled claim.
Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 30 and 47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claims 30 and 47, recitation “comparing the computed weighted vector” and “comparing the first and second CLTD weighting vectors” are not clearly described in

specification. The general statement can be found in paragraph [0078], but how the comparison is done is unclear to one of ordinary skill in the art.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 30, 33, 34, and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paulraj et al. (US 2002/0027957) in view of Kim et al (US 6,766,144).

a) Regarding claim 30, Paulraj et al disclose a receiver comprising:

a channel estimation unit coupled to a signal input, the channel estimation unit containing circuitry to calculate an estimate of a communications channel (82A-X, 84, and 88 in Fig. 9; [0087-0090]);

a weighting vector unit coupled to the channel estimation unit, the weighting vector unit containing circuitry to compute a computed weighting vector from the estimate of the communications channel (112 in Fig. 10B; [0091]);

a feedback unit coupled to the weighting vector unit, the feedback unit to provide the computed weighting vector back to a source of a received signal provided by the signal input (feedback to transmitter in Fig. 9); and

an interference resistant detection unit coupled to the signal input, the interference resistant detection unit containing circuitry to use the estimate of the

communications channel, spreading codes, and the weighting vector interference resistance of the receiver (86 in Fig. 9; Fig. 10B; [0091]), wherein the receiver receives signals from a plurality of users (the receiver system can be used in TDMA, CDMA, FDMA, and OFDMA (abstract)).

Paulraj et al disclose all the subject matters above except for the specific teaching of a weight verification unit.

However, Kim et al. disclose an optimum weight estimating method in a closed loop transmit diversity system (Fig. 1), wherein the weight vector determiner (23 in Fig. 2) generate a comparison result by comparing the computed weighting vector with a received weighting vector received by the input signal (Col 7, L65-Col 8, L51). This way, the calculation is simplified and power loss is minimized (abstract). Therefore, it is obvious to one of ordinary skill in the art to implement the optimum weight estimation method of Kim et al in the receiver weight computation of Paulraj et al. By doing so, reduce weight calculating and provide optimum feedback information in a transmit diversity system.

b) Regarding claim 33, Paulraj et al disclose wherein the interference resistant detection unit first equalizes the received signal (114 in Fig. 10B) and then despreads the equalized received signal (inhere in CDMA system).

c) Regarding claim 34, Paulraj et al disclose wherein the interference resistant detection unit first equalize the received signal (114 in Fig. 10B), then despreads the equalized received signal, and then coherently combines the despread received signal (inherent in CDMA system).

d) Regarding claim 36, Paulraj et al disclose, wherein the communications channel is a wireless communications channel (as shown in Fig. 7).

e) Regarding claim 37, Paulraj et al disclose, wherein the communications system is a code-division multiple access (CDMA) communications system (abstract).

f) Regarding claim 38, Paulraj et al disclose, wherein the transmitter transmits the encoded and spread data stream over multiple antennas (inherent in CDMA system).

7. Claims 47, and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable by Das et al. (US 2003/0148770) in view of Kim et al (US 6,766,144).

a) Regarding claim 47, Das et al disclose a method for interference-resistance for multiple users using closed-loop transmit diversity (CLTD) comprising:

receiving a first signal at a receiver (122 in Fig. 1 and 204 in Fig. 2);

the receiver computing a first CLTD weighting vector from the first received signal (128 in Fig. 1 and 208 in Fig. 2);

the receiver providing the CLTD weighting vector to a transmitter (129 in Fig. 1 and 210 in Fig. 2);

receiving a second signal weighted by a second CLTD weighting vector at the receiver (inherent in block 208 in Fig. 2); and

the receiver suppressing interference (119 in Fig. 1 and 212 in Fig.2).

Das et al disclose all the subject matters above except for the specific teaching of comparing the first and second CLTD weighting vectors.

However, Kim et al. disclose an optimum weight estimating method in a closed loop transmit diversity system (Fig. 1), wherein the weight vector determiner (23 in Fig. 2) generate a comparison result by comparing the computed weighting vector with a received weighting vector received by the input signal (Col 7, L65-Col 8, L51). This way, the calculation is simplified and power loss is minimized (abstract). Therefore, it is obvious to one of ordinary skill in the art to implement the optimum weight estimation method of Kim et al in the receiver weight calculation of Das et al. By doing so, reduce weight calculating and provide optimum feedback information in a transmit diversity system.

b) Regarding claim 49, Kim et al. disclose wherein the first CLTD weighting vector is delayed in the receiver before being compared to the second CLTD weighting vector (53 in Fig. 5).

c) Regarding claim 50, Das et al disclose wherein the suppressing interference further comprising using a channel estimate and spreading codes for each user (126 in Fig. 1 and [0021]).

8. Claims 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Das et al. (US 2003/0148770) in view of Kim et al (US 6,766,144), and in further view of Liang et al. (US 2003/0165131).

a) Regarding claims 51 and 52, Das and Kim et al. teach a CDMA system with all the subject matters above except for the specific teaching of the receiver comprise equalizer, despreader and a combiner.

However, Liang et al, disclose a CDMA system, wherein the receiver comprise equalizing the received signal (412 in Fig. 7); despreading the equalized received signal (418 in Fig. 7); and coherent combining the despread equalized received signal (420 in Fig. 7).

Both Das and Kim et al are directed to CDMA system. Therefore, it is obvious to one of ordinary skill in art to combine the teaching of equalizer, despreader and a combiner of Liang et al. in the receiver system of Das. So that the equalizer will apply the CLTD weighting vector and a channel estimate to the received signal. By doing so, effective recover the transmitted signal and suppressing interference in a CDMA system.

Allowable Subject Matter

9. Claims 28, 39, 40, 42, 46, 48, and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 1, 3, 6, 9-11, 14, 19-23, and 45 allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Puente whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Puente
/E. Y. P./
Examiner, Art Unit 2611

July 9, 2008

/Chieh M Fan/

Supervisory Patent Examiner, Art Unit 2611